studies have found differences in populations with and without a telephone in demographic, economic, and health characteristics. African Americans, individuals with low incomes, living in rural areas, with less than 12 years education are less likely to live in a household with a telephone;[2,3,4] however, differences in health indicators tend to be small.[5] Nonetheless, results may understate the true level of risk in some of the subpopulations of children in North Carolina. Post-stratification adjustments for age, race, and sex, and other weighting adjustments help minimize the impact of these differences.[6] In addition, previous studies have found BRFSS prevalence estimates are similar to results based on face-to-face interviews.[7,8] Significant advantages of the telephone survey methodology include better quality control over data collection made possible by a CATI system, cost efficiency, and speed of data collection. The content of the survey questions, questionnaire design, data collection procedures, interviewing techniques, and editing procedures have been carefully developed to improve data quality and reduce the potential for bias.[9,10]

CELL PHONE ONLY HOUSEHOLDS

Since NC CHAMP and NC BRFSS have traditionally only surveyed households with landline phones, the widespread use of cellular phones has impacted both telephone surveys. Previous studies have found differences in cell phone only compared to landline telephone populations in demographic, economic, and health characteristics. Cell phone only samples are more likely to be male, African American, Hispanic, under the age of 34, employed, of lower income, and unmarried compared to landline only samples.[11,12] Significant differences in health care access and behaviors have also been found such that cell phone only adults are more likely to be binge drinkers, currently smoke, engage in regular physical activities, have an unmet need for medical care due to cost, and have used preventive health care services.[13,14] However, demographic weighting adjustments greatly reduce these biases such that when data from landline telephone surveys were weighted to match population demographic characteristics, bias is similar to the margin of sampling error on the landline sample (less than 2 percentage points) for the majority of health indicators.[14] Although greater bias (1–5%) has been found for some estimates of health care and behavioral health indicators (e.g., binge drinking, smoking, financial barriers to medical care) to specific populations (i.e., young or low-income adults), bias can be attenuated to some extent through weighting adjustments.[15] BRFSS post-stratification adjustments include age, race, sex, and ethnicity. The CDC is currently developing weights for the BRFSS data using raking methodology that will also allow for marital status and education to be included in the post-stratification weighting process. With the addition of education and marital status, these raked weights will yield a weighted sample that is more representative of the state's less-educated or lower-income population. Thus, the use of raked weights may further account for socio-demographic differences between cell phone only and landline populations and aid in producing less-biased estimates.

As more North Carolinians abandon landline phones and become "cell phone only," the SCHS recognizes the importance of incorporating these households into the survey framing scheme. In 2009, the NC BRFSS added a cell phone component to its landline survey. However, fiscal constraints make expanding the surveys to include cell-phone only households difficult. Including a cell phone component substantially increases program expenditures given that cell phone interviews cost roughly two and a half times the cost for completing a landline interview. This is due to the fact that it takes significantly more time (e.g., log on hours) and effort (e.g., more dialings) per interview to complete a cell phone interview compared to a landline interview.[16] Therefore, additional funding dedicated to collecting a cell phone sample will be necessary for the NC CHAMP and BRFSS to survey households that are serviced only by cell phones.

Summary

NC CHAMP is a comprehensive surveillance system in North Carolina used to assess the health characteristics of children and adolescents between ages 0 to 17. The NC CHAMP telephone survey is implemented on an annual basis through the State Center for Health Statistics' Survey Center. More information, including questionnaires, data tables, and publications, is available on the SCHS Web site at www.schs.state.nc.us/SCHS/champ.